Project Fact Sheet

CEC / SMUD Regen Project 1.3 Utility System Capacity and Customer Demand Value of PV - NREL

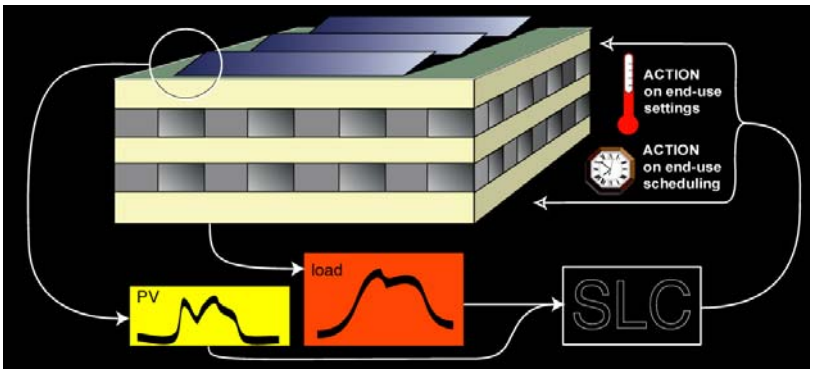
GOALS

This task will:

- Use geosynchronous orbiting earth satellite (GOES) satellite data, verified by electric meter data, to determine the potential peak and capacity value of PV.
- Beta test the solar load controller developed by the State University of NY.
- Assume PV installations for various types of customers and analyze the potential benefits from both load factor and power factor manipulation.
- Analyze:
  1. PVs unquantified benefits
  2. PVs match to utility peak
  3. The benefits of orienting PV arrays to match PV output with utility demand peaks.
- Implement findings of value into SMUD's accounting system, rates office and business office.

PROJECT DESCRIPTION

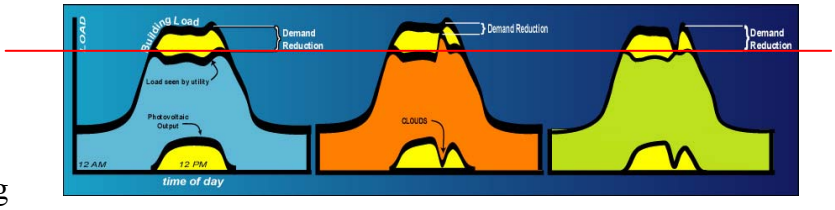
Photovoltaic systems have load profiles that are driven by available sunlight. The summer peak-period load profiles in Sacramento also track available sunlight and peak outdoor temperatures, although the peak is shifted about two hours into the evening by thermal lag and residential air conditioning. The National Renewable Energy Laboratory has looked at the California effective load carrying capacity (ELCC) for California's utility system as well as several types of customers. The ELCC for California is one of the highest, averaging 60%- 70%. Recent studies have shown that controlling building loads can improve this ELCC to 95%. However, current rate structures do not adequately reward building owners this type of load control. Similarly, current rate structures do not reward the owners of PV systems who orient their PV arrays westward to match the SMUD system peak. A potentially high value of either PV or advanced building control is not realized.



BENEFITS TO CALIFORNIA

With a potentially high peak-period capacity value for PV, there may be economic mechanisms in the generation market or alternative SMUD rates structures which could capture the value of peak-load matching and encourage distributed PV systems. This project will determine previously financial benefits for photovoltaics.

FUNDING AMOUNT



This project is a high level collaboration between federal and state agencies, and is not receiving any PIER funding.

PROJECT STATUS

Project is very close to being finished.

FOR MORE INFORMATION

Joseph McCabe
California Energy Commission
1516 Ninth Street, MS-43
Sacramento, CA 95814-5504
(916) 654-4412
jmccabe@energy.state.ca.us

Christy Herig
National Renewable Energy Laboratory
1617 Cole Blvd
Golden, CO 80401-3393
303-384-6546
FAX 303-384-6490